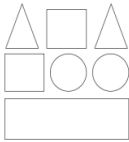



Y1 Personalised Learning Journey Date: WB:		
NC Objective: Geometry - Position and direction		
Resources/documents: Ready to Progress Guidance, White Rose Small steps, White Rose Calculation Policies (Use of concrete), NCETM mastery assessment docs.		
Natural objects, 2d + 3d shapes, every day objects		
Pre- assessment	Assessment tasks	Language Focus
Teaching sequence	Learning tasks	Language Focus
1.  WALT: Describe turns	<p><b>WILF:</b> I can use objects to describe turns as full, half, quarter and three-quarter.</p> <p>Turn selves / each other to face different ways. Practise full turns, half turns, quarter and three-quarter. Choose a turn out of a bag, turn that amount, partner to say which turn.</p> <p>Use objects – all start the same way, explore different turns with objects and compare how they change depending on the turn.</p> <p><b>WILF:</b> I can describe the turns of images as full, half, quarter and three-quarter.</p> <p>Show pictures – children to describe how the different shapes / images have turned. First image &gt; turn &gt; match the correct other shape Use correct labels to describe the turns of the images.</p> <p><b>Apply</b> X says the shape has been turned one quarter – do you agree?</p> <p><b>GD</b> Shape that's the same on more than one turn – X says it's been turned a whole turn X says it's been turned half - who is right (both)</p>	Turns Full turn Half turn Quarter turn Three-quarter turn
2.  WALT: Describe position and direction	<p><b>WILF:</b> I can use objects and practical activities to explore position and direction</p> <p>Physical activity- chn in teams / pairs with grid of cones, give directions to reach a certain cone / point (a bit like a treasure hunt) using positional language. Purple mash – maze explorer. Move characters through the maze, explaining how to get from one place to the other.</p> <p><b>WILF:</b> I can use pictures to explore position and direction</p>	Forwards Backwards Right Left

	<p>Picture of a maze – use directional language to explain how to get from a to b, without physically being able to move the character as yet.</p> <p>Use the clues to colour the shapes.</p>  <ul style="list-style-type: none"> <li>• The circle in the middle is blue.</li> <li>• The circle on the right is red.</li> <li>• The shape up from the right circle is green.</li> <li>• The shape down from the circles is green.</li> <li>• The square to the left of the green triangle is red.</li> <li>• The four-sided shape up from the rectangle is blue.</li> <li>• The triangle on the left is red.</li> </ul>	
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<p>3.</p> <p>WALT: Describe position and direction</p>	<p><b>WILF:</b> I can use concrete objects to build on description of position and direction</p> <p>Lego challenge cards          Blue above green, red below green etc.          Yellow in between white and yellow etc.</p> <p>Chn to use their environment to say what they can see in front, behind, above, below, in between.</p> <p><b>WILF:</b> I can use pictures and drawings to build on description of position and direction</p> <p>Add the missing words to images: the red lego is ____ the green one etc.</p> <p>Strip of outlined shapes – colour according to the positional language list:</p> <ul style="list-style-type: none"> <li>- The red spot is in between the green and the blue</li> <li>- Colour in a green spot above the yellow etc.</li> </ul> <p><b>Apply</b></p> <p>How many different ways can you describe the position of the 2p coin?</p> 	<p>Right          Left          Above          Below          In between          Top          Bottom</p>
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**Y2 Personalised Learning Journey**

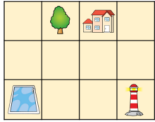
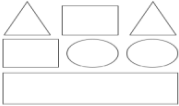


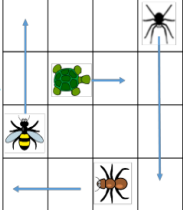
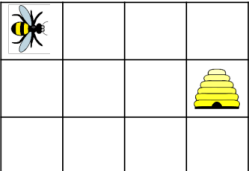


**Position and Direction**

**NC Objective:**

- order and arrange combinations of mathematical objects in patterns and sequences
- use mathematical vocabulary to describe position, direction and movement, including movement in a straight line and distinguishing between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anticlockwise).

**Resources/documents:** White Rose Small steps, White Rose Calculation Policies (Use of concrete), NCETM mastery assessment docs, Garry Hall.org.uk

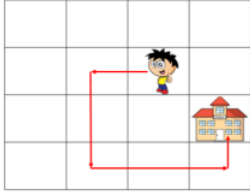
**Real life discussion before teaching:** Brainstorm how we use position and direction in everyday life. – directions, sat navs, maps and road signs

Pre-assessment	Assessment tasks	Language Focus
White rose maths assessment		
<b>Teaching sequence</b>	<b>Learning tasks</b>	
<p><b>WALT:</b> Describe position and direction</p>	<p>Use 'left', 'right', 'forwards' and 'backwards' to describe position and direction. Describe the position of objects and shapes from different starting positions. Play board games such as Snakes and Ladders to explore positional language. They will describe position using: 'top', 'in between', 'bottom', 'above' and 'below'. Children explore the position of objects and shapes from different starting points. Problem solve when ready.</p> <div style="display: flex; justify-content: space-around;"> <div data-bbox="355 824 539 927"> <p>Use a grid to move a bot to different places. Use the words 'left', 'right', 'forwards' and 'backwards' to describe the movements.</p>  </div> <div data-bbox="778 810 1123 1088"> <p>Use the clues to colour the shapes.</p>  <ul style="list-style-type: none"> <li>• The circle in the middle is blue.</li> <li>• The circle on the right is red.</li> <li>• The shape up from the right circle is green.</li> <li>• The shape down from the circles is green.</li> <li>• The square to the left of the green triangle is red.</li> <li>• The four-sided shape up from the rectangle is blue.</li> <li>• The triangle on the left is red.</li> </ul> </div> </div>	<p>What are the different directions we can move in? How would I get to the .....? How could you describe the movement? How could we record the movement?</p>
<p><b>WALT:</b> Describe movement</p>	<p>Use language 'forwards', 'backwards', 'up', 'down', 'left' and 'right' to describe movement in a straight line. Children will practically follow and give directions with a partner before writing directions for routes and recording routes on 2-D grids.</p> <p>Complete the stem sentences to describe the movements made.</p> <p>The  has moved 1 square _____.</p> <p>The  has moved ___ squares _____.</p> <p>The _____ has moved 2 squares up.</p> <p>The _____ has moved ___ squares down.</p> <div style="display: flex; justify-content: space-around;"> <div data-bbox="643 1249 826 1458">  </div> <div data-bbox="858 1211 1134 1509"> <p>How many different routes can you write for the bee to get to the hive?</p> <p>Use the words forwards, backwards, left and right.</p>  </div> </div>	<p>How far have you/has your partner moved? In what direction have you/has your partner moved? What direction are we facing in at the start? Why is this important? Can you describe the movements made by _____?</p>
<p><b>WALT:</b> Describe turns</p>	<p>Children describe turns using the language 'full turn', 'half turn', 'quarter turn', 'three-quarter turn', 'clockwise' and 'anticlockwise'. Ensure ch are taking into account the direction they are facing before they start.</p> <p>Turn a figure.</p> <p>Ask your partner to describe the turn using the language, 'full turn', 'half turn', 'quarter turn', 'three-quarter turn', 'clockwise' and 'anticlockwise.'</p> <p>Match the turn to the description.</p> <div style="display: flex; justify-content: space-around;"> <div data-bbox="395 1756 491 1883">  </div> <div data-bbox="533 1749 612 1883"> <p>A full turn.</p> <p>A quarter turn clockwise.</p> <p>A half turn anticlockwise.</p> </div> </div> <div style="text-align: center; margin-top: 20px;">  <p><b>Always, Sometimes, Never</b></p> <p>If two objects turn in different directions they will not be facing the same way.</p> </div>	<p>What direction was the turn? Describe the turn that the number shapes have made? Could there be more than one answer? Why?</p>

WALT:  
Describe  
movement  
and turns

Children use their knowledge of movement and turns to describe and record directions. They need to be aware of the direction the object is facing before it is turned. Children explore movement and turns further during P.E.

Describe the route Dennis takes to school.



Is Whitney correct?



Convince me.

A quarter turn clockwise is the same as a three-quarter turn anticlockwise.

Which direction is \_\_\_ facing to begin with? Why is this important? Is \_\_\_ moving or just changing direction? How do you know? How can we record the directions given? Are there any other routes that could be taken?

NC Objectives:

Year 3

Pupils should be taught to:

- Identify right angles, recognise that 2 right angles make a half-turn, 3 make three-quarters of a turn and 4 a complete turn; identify whether angles are greater than or less than a right angle

Year 4

Pupils should be taught to:

- describe positions on a 2-D grid as coordinates in the first quadrant
- describe movements between positions as translations of a given unit to the left/right and up/down
- plot specified points and draw sides to complete a given polygon

Resources/documents: Ready to Progress Guidance, White Rose Small steps, White Rose Calculation, deepening understanding resources Policies (Use of concrete), NCETM mastery assessment docs, past SATs questions. Deepening Understanding TTRS Prodigy Maths Classroom secrets

Compass, clock,

Real life discussion before/, during teaching: Where do we use measure in real life:

EG: Grid work, compass, map reading, travelling, following the sat nav.

Pre- assessment	Assessment tasks	Language Focus
	White rose assessment. PUMA assessment.	
Teaching sequence	Learning tasks	Language Focus
<b>1. Describe position</b>	<p>Children are introduced to coordinates for the first time and they describe positions in the first quadrant. They read, write and use pairs of coordinates. Children need to be taught the order in which to read the axes, x axis first, then y-axis next. They become familiar with notation within brackets.</p> <p><b>Key questions:</b></p> <ul style="list-style-type: none"> <li>Which is the x-axis?</li> <li>Which is the y-axis?</li> <li>In which order do we read the axes?</li> <li>Does it matter in which order we read the axes?</li> <li>How do we know where to mark on the point?</li> <li>What are the coordinates for _____?</li> <li>Where would ( __ , __ ) be?</li> </ul> <p><b>Possible misconceptions:</b></p> <ul style="list-style-type: none"> <li>Identify the x and y axis the wrong way round.</li> <li>Understand the phrase along the corridors and up the stairs.</li> <li>Misuse of brackets.</li> </ul>	

<p>2. Draw on a grid.</p>	<p>Children develop their understanding of coordinates by plotting given points on a 2-D grid. Teachers should be aware that children need to accurately plot points on the grid lines (not between them). They read, write and use pairs of coordinates.</p> <p><b>Key questions:</b></p> <ul style="list-style-type: none"> <li>• Do we plot our point on the line, or next to the line?</li> <li>• How could we use a ruler to help plot points?</li> <li>• In which order do we read and plot the coordinates?</li> <li>• Does it matter which way we plot the numbers on the axis?</li> <li>• What are the coordinates of _____?</li> <li>• Where would ( __, __ ) be?</li> <li>• Can you show _____ on the grid?</li> </ul> <p><b>Possible misconceptions:</b></p> <ul style="list-style-type: none"> <li>• Identify the x and y axis the wrong way round.</li> <li>• Understand the phrase along the corridors and up the stairs.</li> <li>• Misuse of brackets.</li> </ul>	
<p><b>3. Move on a grid.</b></p>	<p>Children move shapes and points on a coordinate grid following specific directions using language such as: left/right and up/down. Teachers might want to use a small 'object' (e.g. a small cube) to demonstrate the idea of moving a point on a grid. They apply their understanding of coordinates when translating by starting with the left/right translation followed by up/down.</p> <p><b>Key questions:</b></p> <ul style="list-style-type: none"> <li>• Can you describe the translation?</li> <li>• Can you describe the translation in reverse?</li> <li>• Why do we go left and right first when describing translations.</li> <li>• What are the coordinates for point _____?</li> <li>• Write a translation for D for your partner to complete.</li> <li>• What do you notice about the new and original points?</li> <li>• What is the same and what is different about the new and original points?</li> </ul> <p><b>Possible misconceptions:</b></p> <ul style="list-style-type: none"> <li>• Identify the x and y axis the wrong way round.</li> <li>• Understand the phrase along the corridors and up the stairs.</li> <li>• Misuse of brackets.</li> </ul>	
<p>4. Describe movement on a grid.</p>	<p>Children describe the movement of shapes and points on a coordinate grid using specific language such as: left/right and up/down. Sentence stems might be useful. They start with the left/right translation followed by up/down. Teachers should check that children understand the idea of 'corresponding vertices' when describing translation</p>	

of shapes (e.g. vertex A on the object translates to vertex A on the image).

**Key questions:**

- Can you describe the translation?
- Can you describe the translation in reverse?
- Can you complete the following stem sentence: Shape A is translated \_\_\_ left/right and \_\_\_\_up/down to shape B

**Possible misconceptions:**

- Identify the x and y axis the wrong way round.
- Understand the phrase along the corridors and up the stairs.
- Misuse of brackets.
- Translate the shape incorrectly following the rules for coordinates.

Y5 Personalised Maths Learning Journey Date: WB:		
<b>NC Objectives:</b> <ul style="list-style-type: none"> <li>identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has not changed.</li> </ul>		
<b>Resources/documents:</b>  Ready to Progress Guidance, White Rose Small steps, White Rose Calculation Policies (Use of concrete), NCETM mastery assessment docs.  Base 10, place value counters, part-whole models, bar models, real-life objects e.g. sweets etc.		
<b>Real life discussion before teaching:</b> Building, constructions, shopping, baking		
Pre- assessment	Assessment tasks	Language Focus
Revision from previous years: <ul style="list-style-type: none"> <li>describe positions on a 2-D grid as coordinates in the first quadrant</li> <li>describe movements between positions as translations of a given unit to the left/right and up/down</li> <li>plot specified points and draw sides to complete a given polygon.</li> </ul>	White Rose Year 4 Position and Direction Assessment sheets.	
Teaching sequence	Learning tasks	Language Focus
1. WALT: To describe position.  WILF: I use the first quadrant of a coordinate grid and coordinates to describe position.	<p><b>Model how to read coordinates. Make links to when the children may see them in everyday life. Have they used them before?</b></p> <p>Once children have started. Have children that are on apply task to come to board to check understanding and give input on how to answer using correct vocabulary.</p> <p>Problem solving and reasoning questions.</p> <p>LA- find treasure on a coordinates treasure map. Make a large treasure map coordinates grid (maybe have a laminated one to save for future lessons. Maybe have a few with all different objects on. Children have 1 each. Say, gold coin and, if they have</p>	Coordinates, grid, x-axis, y-axis, position, point, first quadrant



	<p>it, they say the coordinate and cross it off: like bingo.</p> <p>Apply- give them coordinates, some correct and some not. They need to decide if they are correct and say what it should be instead.</p>	
<p>2.</p> <p>WALT: To plot points on a grid.</p> <p>WILF: I will use coordinates to plot points on to a first quadrant.</p>	<p>Try human coordinates outside on the playground (draw a grid with chalk beforehand). Not model how to plot points on a grid when on paper or board.</p> <p>Whole class battleships?</p> <p>Once children have started. Have children that are on apply task to come to board to check understanding and give input on how to answer using correct vocabulary.</p> <p>Problem solving and reasoning questions.</p> <p>LA- give them a few coordinates on a grid to plot. Have a game of battleships.</p> <p>Apply- give coordinates for them to plot to make a shape but miss the last coordinate off. What will the next coordinate be? How do you know?</p> <p>Repeat with different shapes.</p>	<p>Coordinates, grid, x-axis, y-axis, position, point, first quadrant, plot</p>
<p>3. + WORD PROBLEMS</p> <p>WALT: To position in the first quadrant.</p> <p>WILF: I will use coordinates to plot points on to a first quadrant, including 0,0.</p>	<p>Recap yesterday's learning. Introduce what the position would like if it included 0 as one or both of the coordinates.</p> <p>Once children have started. Have children that are on apply task to come to board to check understanding and give input on how to answer using correct vocabulary.</p> <p>Problem solving and reasoning questions.</p> <p>WORD PROBLEMS</p> <p>LA- recap yesterday's learning.</p> <p>Apply- give coordinates for them to plot to make a shape but miss the last coordinate off. What will the next coordinate be? How do you know?</p> <p>Repeat with different shapes.</p>	<p>Coordinates, grid, x-axis, y-axis, position, point, first quadrant, plot</p>
<p>4.</p> <p>WALT: To translate shapes on a grid</p>	<p>Model translation</p> <p>Once children have started. Have children that are on apply task to</p>	<p>Coordinates, grid, x-axis, y-axis, position, point, first quadrant, plot, translate, vertex</p>

<p>WILF: I will count boxes (jumps) to translate one vertex at a time.</p>	<p>come to board to check understanding and give input on how to answer using correct vocabulary.</p> <p>Problem solving and reasoning questions.</p> <p>LA- same as class but very practical moving physical shapes on a laminated grid. They will physically move it by counting the jumps.</p>	
<p>5. WALT: To translate shapes on a grid</p> <p>WILF: I will use coordinates to translate one vertex at a time.</p>	<p>Model translation using coordinates.</p> <p>Once children have started. Have children that are on apply task to come to board to check understanding and give input on how to answer using correct vocabulary.</p> <p>Problem solving and reasoning questions.</p> <p>LA- same as class but very practical moving physical shapes on a laminated grid. They will physically move it and then look at how the coordinates.</p>	<p>Coordinates, grid, x-axis, y-axis, position, point, first quadrant, plot, translate, vertex</p>
<p>6. WALT: To identify lines of symmetry.</p> <p>WILF: I will use mirrors, tracing paper and knowledge of equal parts of a shape to identify and draw lines of symmetry.</p>	<p>What is symmetry and when do we see it? Give paper shapes for children to explore lines of symmetry. Model how we might find them with shapes on a sheet of paper using mirrors or finding half way points.</p> <p>Problem solving and reasoning questions.</p> <p>LA- children with have paper shapes to fold and draw lines on like input. Give a variety of shapes. Now look at shapes on a page.</p>	<p>Coordinates, grid, x-axis, y-axis, position, point, first quadrant, plot, translate, vertex, symmetry, line of symmetry</p>
<p>7. WALT: To complete drawings of shapes using lines of symmetry.</p> <p>WILF: I will use lines of symmetry and counting boxes to complete shapes with a line of symmetry.</p>	<p>Model. Show children how to turn their page to sometimes help with the shape. Model again using the boxes to count and position accurately.</p> <p>Problem solving and reasoning questions.</p> <p>LA- children will use mirrors and tracing paper to draw the remainder of the shape, if they need it. Encourage them to count the boxes.</p>	<p>Coordinates, grid, x-axis, y-axis, position, point, first quadrant, plot, translate, vertex, symmetry, line of symmetry</p>
<p>8.</p>	<p>What is a reflection? Where do we see one?</p>	<p>Coordinates, grid, x-axis, y-axis, position, point, first quadrant, plot, translate,</p>

<p>WALT: To draw a reflected shape over a parallel line.</p> <p>WILF: I will use lines of symmetry and counting boxes to draw reflected shapes.</p>	<p>Model drawing reflected shapes by counting boxes and moving one vertex at a time.</p> <p>Problem solving and reasoning questions.</p> <p>LA- children will have shapes that they can draw around and then use to position on the other side first to check before drawing again. If that is secure, look at counting boxes like the rest of the class. They may need tracing paper to help.</p>	<p>vertex, symmetry, line of symmetry, parallel, reflection, reflected</p>
<p>9.</p> <p>WALT: To draw a reflected shape over a parallel line.</p> <p>WILF: I will use coordinates to read, plot and draw reflected shapes.</p>	<p>Model drawing reflected shapes by using coordinates and moving one vertex at a time.</p> <p>Problem solving and reasoning questions.</p> <p>LA- if secure in yesterday's learning, now try using coordinates to reflect shapes.</p>	<p>Coordinates, grid, x-axis, y-axis, position, point, first quadrant, plot, translate, vertex, symmetry, line of symmetry, parallel, reflection, reflected</p>

Y6 Personalised Learning Journey Geometry position and direction

NC Objectives:

- describe positions on the full coordinate grid (all four quadrants)
- draw and translate simple shapes on the coordinate plane, and reflect them in the axes

Resources/documents: Ready to Progress Guidance, White Rose Small steps, White Rose Calculation Policies (Use of concrete), NCETM mastery assessment docs, past SATs questions.

Base 10. Place value counters.

Real life discussion before/during teaching : when would we use coordinates in real life-maps, atlas etc show some examples

Pre- assessment	Assessment tasks	Language Focus															
Revision from previous years:	<p>Coordinates in the first quadrant</p> <p>Lines of symmetry, symmetrical</p> <p>Give some small tasks to assess knowledge</p>	<p>Quadrant</p> <p>Axes</p> <p>Axis</p> <p>X and y axis</p> <p>Reflection</p> <p>Mirror line</p> <p>Symmetry</p> <p>Symmetrical</p>															
Teaching sequence	Learning tasks	Language Focus															
WALT: read and plot coordinates	<p>Model how to read and plot coordinates in 4 quadrants.</p> <p>Practise:</p> <div data-bbox="609 1330 876 1632" data-label="Figure"> </div> <div data-bbox="952 1245 1185 1585" data-label="Figure"> </div> <p>Apply:</p> <div data-bbox="609 1778 1002 2045" data-label="Figure"> <table border="1" data-bbox="609 1877 813 1977"> <thead> <tr> <th></th> <th>Inside the square</th> <th>outside the square</th> </tr> </thead> <tbody> <tr> <td>(50, 70)</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>(60, -30)</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>(-10, 50)</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>(-30, -30)</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> </tbody> </table> </div>		Inside the square	outside the square	(50, 70)	<input type="checkbox"/>	<input type="checkbox"/>	(60, -30)	<input type="checkbox"/>	<input type="checkbox"/>	(-10, 50)	<input type="checkbox"/>	<input type="checkbox"/>	(-30, -30)	<input type="checkbox"/>	<input type="checkbox"/>	<p>Quadrant</p> <p>Axes</p> <p>Axis</p> <p>X and y axis</p>
	Inside the square	outside the square															
(50, 70)	<input type="checkbox"/>	<input type="checkbox"/>															
(60, -30)	<input type="checkbox"/>	<input type="checkbox"/>															
(-10, 50)	<input type="checkbox"/>	<input type="checkbox"/>															
(-30, -30)	<input type="checkbox"/>	<input type="checkbox"/>															

**GD:**

ABDE is a rectangle on coordinate axes.  
The sides of the rectangle are parallel to the axes.

Point C is the centre of the rectangle.

What are the coordinates of B and D?

B is (     ,     )

D is (     ,     )

Here are two triangles drawn on coordinate axes.

Triangle B is a reflection of triangle A in the x-axis.  
Two of the new vertices of triangle B are (10, -10) and (20, -30).

What are the coordinates of the third vertex of triangle B?

(     ,     )

WALT: Translate shapes.

Recap on using coordinates in four quadrants.

Teach that translation means moving.

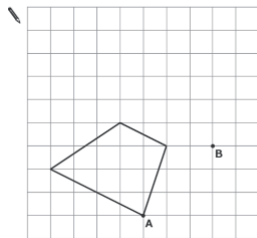
Practise translating shapes to various positions using position and directional language on a square grid then move onto translation on a coordinate grid (four quadrants).

**EG:**

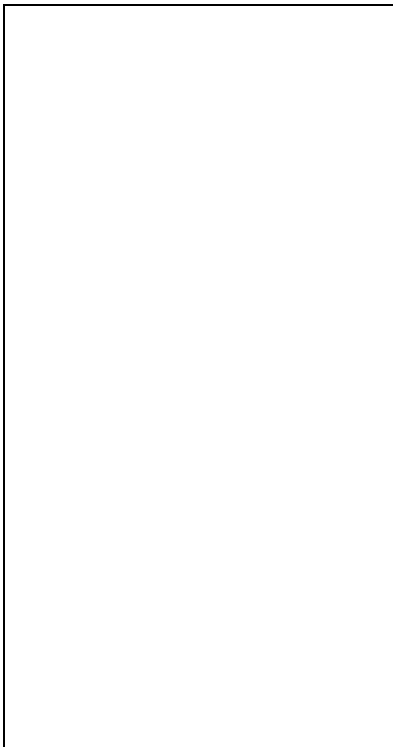
Here is a quadrilateral on a square grid.  
The quadrilateral is translated so that point A moves to point B.

Draw the quadrilateral in its new position.

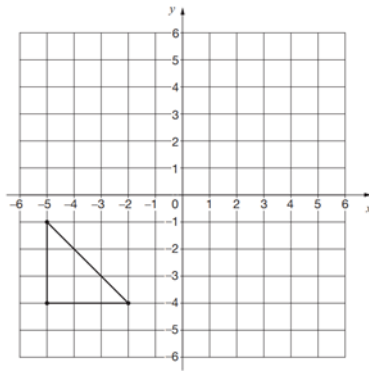
Use a ruler.



Left  
Right  
Up  
Down  
Translate units



Here is a triangle drawn on a coordinate grid.



The triangle is translated 7 right and 5 up.

Draw the triangle in its new position.

WALT: Reflect shapes and patterns

Recap on symmetry and drawing objects as a reflection in a mirror line.

Move onto reflection in four quadrants in a coordinate grid.

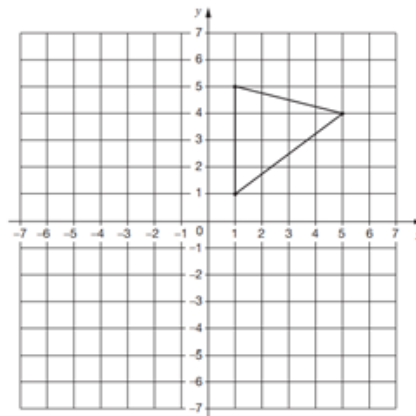
SATs style questions

Combine translation and reflection in a coordinate grid (SATs style questions)

5 The triangle is to be transformed on the grid as follows:

- First translate the shape 7 units down.
- Then reflect the **resulting** triangle in the y-axis.

Draw the new triangle on the grid after **each** transformation.



Use a ruler.

Mirror line  
Symmetrical  
Symmetry  
Reflection  
translate

Assessment -mini SATs test on all types of questions